

Remarks

The various parts of the Office Action (and other matters, if any) are discussed below under appropriate headings.

Non-elected claims 3-15 and 31-35 have been canceled without prejudice or disclaimer of the subject matter contained therein. In addition, claims 18, 23 40 and 44 have been canceled without prejudice or disclaimer of the subject matter contained therein. Independent claims 16, 19, 24, 36 and 37 have been amended for clarity. New dependent claims 49-56 have been added and new claims 57-65 have been added. Support the amendments and new claims can be found, for example, on page 21, line 26 – page 31, line 31 and in FIG. 3A – FIG. 11.

The pending claims have been amended and new claims have been added to clarify features of the invention. The pending claims relate to aspects of display systems and methods including an input signal having image data and display control data. Aspects of the claimed invention provide for encoding and decoding display control data separate from the image data, but together in the same input signal with the image data. Components of the display device are configured to process the display control data included in the input signal and use the display control data to process the image data and synchronously control the passive display and illumination source based on the display control data.

As such, the claimed invention provides the option of bypassing the variable image processing and enhancement algorithms resident on various displays, thereby providing more consistent image display and image enhancement regardless of the image enhancement algorithms resident on a particular display. Also, the creator of a sequence of video images can set the display parameters before delivery of the image signal to a display device.

Independent claims 16, 19, 24, 36 and 37 have been amended to recite various aspects of the invention discussed above, and new claims 49-65 have been added.

Claim Rejections - 35 USC § 102 and § 103

Claim 16, as amended, recites a display system for passive displays, wherein the display system is configured to receive an input signal including both display control data and image data. The display system includes a control configured

to process the display control data included in the input signal and to control the optical characteristics of incident light to a passive display and to process the image data to control optical characteristics of the displayed image based on the display control data.

The invention, as recited in claim 16, includes a display system configured to receive an input signal that includes image data and display control data. The display system includes a control configured to process the display control data included in the input signal and to control the optical characteristics of incident light to the passive display and to process the image data to control optical characteristics of the displayed image based on the display control data.

As noted above, the claimed control processes the display control data included in the input signal, controls the optical characteristics of incident light to the passive display, and processes the image data to control optical characteristics of the displayed image based on the display control data.

Daly fails to disclose or suggest the claimed display system, including a control configured to process display control data within the input signal and to control the optical characteristics of incident light to the passive display and to process the image data to control optical characteristics of the displayed image based on the display control data. For at least this reason, the rejection should be withdrawn.

In addition, in support of the rejections of several of the independent claims, the Office Action, at pages 2-3 (reproduced below for convenience), asserts that the present application under examination unequivocally equates contrast directly with shades of gray (or, stated differently, that "contrast" and "shades of gray" are equivalents based on the specification).

The disclosure also states "contrast (e.g., shades of gray)" (page 9, line 1) which teaches that the contrast of a display device may also be called the shades of gray the display device. Therefore, the references used to adjust the contrast of a display device are also adjusting the shades of gray of the display device as the terms are equivalents based on the definitions within the specification. The Daly reference are capable of optimizing the contrast of displayed images on the passive display device are also optimizing the shades of gray of displayed images on the display device. And when optimizing the shades of gray, the operation state that is determined to be optimal could be equivalent to maximizing the shades of gray of the display. Therefore, Daly does teach maximizing the shades of gray of images displayed on the display device as recited in claim limitations.

In support of this interpretation, the Office Action points to page 9, line 1 of the present application for inclusion of “contrast (e.g., shades of gray).” It is respectfully submitted that this assertion is flawed for several reasons. First, Applicant’s disclosure does not establish “contrast” and “shades of gray” as equivalents. Numerous portions of the application discuss contrast and shades of gray as separate elements. For example, the Examiner’s attention is directed to page 8, line 13, page 8, line 26 and page 16, line 10, where contrast and shades of gray are discussed as separate terms. Further, even looking at the page 9, line 1 language cited in the Office Action, the phrase, “maximize contrast (e.g., shades of gray),” does not establish “contrast and shades of gray” as equivalents. The cited passage discloses, contrast, *for example*, shades of gray, rather than expressing a clear intent to define the terms as equivalents.

In addition, the Office Action’s assertion goes against the normally-accepted definition for the term “contrast.”¹ Contrast normally is defined as luminance of the brightest white value divided by the luminance of the darkest grey or black value (across a single image or a series of images depending how the term is modified or used). Therefore, “maximum contrast” is equivalent to (the transmission of the brightest shade of grey) divided by (the transmission of the darkest shade of grey). Further, the term maximizing contrast is not directly related to other grey shade properties such as their number or their distribution

For example, in an image having 256 shades of gray, the luminance of the brightest pixel could be increased to a maximum white value and the luminance of the darkest pixel could be decreased to a minimum dark value, thereby increasing or maximizing contrast, without affecting any of the other pixels or shades of gray in an image or a series of images. In this example, the contrast of the image or series of images could be viewed as being maximized without maximizing the shades of gray of the image.

In light of the foregoing discussion, the Examiner is reminded of the guidance provided in MPEP 2111.01 with respect to claim interpretation.

“[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of

¹ In fact, Daly appears to recognize the normally-accepted definition of contrast (see, for example, Daly’s discussion of dynamic range in paragraph [0008]).

the invention, *i.e.*, as of the effective filing date of the patent application.” *Phillips v. AWH Corp.*, *415 F.3d 1303, 1313<, 75 USPQ2d 1321>, 1326< (Fed. Cir. 2005) (*en banc*). *Sunrace Roots Enter. Co. v. SRAM Corp.*, 336 F.3d 1298, 1302, 67 USPQ2d 1438, 1441 (Fed. Cir. 2003); *Brookhill-Wilk 1, LLC v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1298 67 USPQ2d 1132, 1136 (Fed. Cir. 2003)(“In the absence of an express intent to impart a novel meaning to the claim terms, the words are presumed to take on the ordinary and customary meanings attributed to them by those of ordinary skill in the art.”).²

In the instant case, the Applicant has not done anything to provide “an express intent to impart a novel meaning to the claim terms” “contrast” or “shades of gray,” and the Applicant has not done anything to establish “contrast” and “shades of gray” as equivalents.

For at least these reasons, it is respectfully submitted that the rejection of claim 16 should be withdrawn. Dependent claim 49 should be in condition for allowance for at least the reason that it depends from claim 16.

Claim 19, as amended, recites an image processing system for preparing control data for use in displaying a sequence of images that includes a buffer memory to receive the image data representative of the sequence of images and an analyzer configured to analyze input image data of a plurality of images of the sequence of images. The analyzer is configured to create illumination control data for use in controlling optical characteristics of the incident light to a light modulating display and to create image control data for controlling processing of the image data in the passive display to control characteristics of displayed images, and to include the display control data in an input signal together with the input image data in a combined output signal of the image processing system to be used as the input to a passive display with an illuminating light source.

Daly fails to disclose or suggest the claimed analyzer configured to analyze illumination characteristics of a plurality of images of the sequence of images and to create illumination control data for use in controlling optical characteristics of the incident light to a light modulating display and to create image control data for controlling processing of the image data to control characteristics of displayed images, and to include the display control data in an input signal together with the input image

2 MPEP 2111.01.

data in a combined output signal of the image processing system to be used as the input to a passive display with an illuminating light source.

For at least these reasons, the rejection of claim 19 and dependent claims 20-22 should be withdrawn. Dependent claims 50-51 should be in condition for allowance for at least the reason that they depend from claim 19.

Claim 24, as amended, recites a display system that includes a passive display, a source of illumination to illuminate the passive display and cooperative with the passive display to present images, and a storage medium providing an input signal that includes display control data and image data, the display control data including illumination control data to control optical characteristics of light from the source of illumination and image control data to control characteristics of displayed images and wherein the display control data is based on an evaluation of illumination of an input scene represented by an image for display, the evaluation occurring prior to storage of the display control data on the storage medium.

Daly has not been found to disclose or suggest the claimed system including a storage medium providing an input signal that includes display control data and image data, the display control data including illumination control data to control optical characteristics of light from the source of illumination and image control data to control characteristics of displayed images and wherein the display control data is based on an evaluation of illumination of an input scene represented by an image for display, the evaluation occurring prior to storage of the display control data on the storage medium.

For at least these reasons, the rejection of claim 24 and dependent claim 25 should be withdrawn. Dependent claims 52-54 should be in condition for allowance for at least the reason that they depend from claim 24.

Claim 36, as amended, recites an image processing system for preparing a signal that includes image data and control data for a passive display with an illuminating light source. The claimed image processing system includes an image obtaining device to provide image data representing input scenes, an image processing apparatus configured to evaluate image data of input scenes, and to provide display control data to be included with the image data, the display control data including illumination control data to control the optical characteristics of an illumination source for a passive display, and image processing control data to control processing of an image displayed by the illuminated passive display.

Daly fails to disclose the claimed image processing system for preparing a signal that includes image data and control data for a passive display having an illuminating light source, including an apparatus configured to evaluate image data of input scenes and to provide display control data to be included with the image data, where the display control data includes illumination control data and image processing control data.

Also, as noted above, the Office Action's previous assertion is based on "contrast" and "shades of gray" being equivalents, which they are not.

For at least these reasons, the rejection of claim 36 should be withdrawn. Dependent claims 55-56 should be in condition for allowance for at least the reason that they depend from claim 36.

Claim 37, as amended, recites a method of editing and encoding images represented by image data captured by an image recording device, where the captured images are composed of an assemblage of pixels for display or projection using a passive display to which input light is incident to provide images. The method includes determining display control data to be used in the display to obtain a desired appearance of a displayed image, the display control data including control data for a characteristic of the input light and control data for the number of shades of gray available in the displayed image, adding the determined display control data to the input signal, the display control data corresponding to the adjusted light characteristic and number of shades of gray, and storing both the display control data and the image data for use subsequently to adjust the characteristic of input light and number of shades of gray available in the image to obtain a desired appearance of the image provided by a passive display.

Daly fails to disclose the claimed method of editing and encoding images, including determining display control data to be used in the display to obtain a desired appearance of a displayed image, the display control data including control data for a characteristic of the input light and control data for the number of shades of gray available in the displayed image, and adding the determined display control data to the image data, the display control data corresponding to the adjusted light characteristic and number of shades of gray, and storing both the display control data and the image data for use subsequently to adjust the characteristic of input light and number of

shades of gray available in the image to obtain a desired appearance of the image provided by a passive display.

In addition, neither Edwards nor Ohyama cure the above-referenced deficiencies of Daly with respect to amended claim 37 in that neither Edwards nor Ohyama have been found to disclose the claimed combination of determining display control data to be used in the display to obtain a desired appearance of a displayed image, the display control data including control data for a characteristic of the input light and control data for the number of shades of gray available in the displayed image, and adding the determined display control data to the image data, the display control data corresponding to the adjusted characteristic and number of shades of gray, and storing both the display control data and the image data for use subsequently to adjust the characteristic of input light and number of shades of gray available in the image to obtain a desired appearance of the image provided by a passive display.

For at least these reasons, the rejection of claim 37 and dependent claims 41-43 should be withdrawn.

The dependent claims, while reciting further features, are not being independently discussed in as much as they are allowable for at least the same reasons as the independent claims from which they depend. This absence of any comment regarding the dependent claims, however, should not be construed as an acquiescence to the contentions made in the Office Action.

New claims 57-65 are believed to distinguish patentably over the references relied on in the Office Action for at least the reasons discussed above with respect to the other pending claims.

Telephone Interview

If it is determined that the application is not in condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

In view of the foregoing, request is made for timely issuance of a notice of allowance.

Respectfully submitted,

RENNER, OTTO, BOISSELLE & SKLAR, LLP

By /Jason A Worgull/
Jason A. Worgull, Reg. No. 48,044

1621 Euclid Avenue
Nineteenth Floor
Cleveland, Ohio 44115
PH: (216) 621-1113
FAX: (216)621-6165

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